Intrado i3 Guarantee Proposal for Durham Emergency Communications Center, North Carolina

intrado

i3 Guarantee Proposal

prepared for

Durham Emergency Communications Center, NC

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EXECUTIVE SUMMARY

The introduction of Enhanced 9-1-1 (E9-1-1) in 1972 represented a significant improvement in 9-1-1 service. Today, 9-1-1 is poised to make another significant jump. Consumer expectations and major world events are necessitating this change. The introduction of a robust and secure next generation 9-1-1 network makes new information, advanced collaboration, and interoperability services available to Public Safety Answering Points (PSAPs) and other public safety entities. These capabilities will generate an exponential improvement in 9-1-1 service, by expanding the degree to which new, contextually appropriate information can be automatically provided to a broadened set of users and agencies.

Intrado is pleased to offer Durham Emergency Communications Center (Durham) the i3 Guarantee, a fully managed bundle of services including call routing, call handling, data and GIS technology with a guarantee to transition Durham to the NENA i3 reference architecture and standard interfaces. This transition will be accomplished in a timeframe that meets Durham's goals of routing voice, text and data alerts via Durham-supplied GIS data, rather than Selective Router ESN routing.

Keeping the current PSAP environment in mind, the i3 Guarantee is integrated, operated, and maintained to the public safety class standards demanded of a life-critical application. The i3 Guarantee ensures you get i3 ready, next generation, 9-1-1 solutions to meet your immediate needs, while forming the foundation to implement future i3 capabilities as your needs evolve.

Benefits of the Offer

With Intrado, you benefit from:

- **Guaranteed i3.** Solutions that are compliant with the NENA i3 reference architecture
  - An end to end fully integrated solution comprising of all the i3 functional elements including the call routing components (LNG, LIS, ESRP, ECRF) as well as the GIS data provisioning components.
  - GIS routing including the GIS support and consulting needed to get your data ready to use for routing purposes
  - Hosted CPE - The hosted infrastructure facilitates more cost effective and efficient deployments and includes upgrades to the latest releases.

- **Peace of Mind** that comes with partnering with a trusted and experienced 9-1-1 technology partner to fully manage your transition to next-generation 9-1-1.

- **Full-Budgetary Predictability**. By managing all aspects of your i3 transition from planning to implementation, training and deployment, Intrado offers you one competitive price with no hidden costs or surprises.

- **Support and Confidence.** With Intrado you get a long-term "partner" that will work with you to manage your transition to next-generation 9-1-1 and industry standards compliancy today and tomorrow.

- **Control.** Intrado offers unprecedented choice, leaving you in full control over your operations, providing the flexibility to change standard operational procedures as needed, and the ability to maximize your staffing resources.

- **The Resources** to manage your i3 transition needs, so you can focus on saving lives while Intrado delivers your next-generation technology**.**

Overview of Services

The Intrado i3 Guarantee, our next generation voice, text, data, and hosted call handling emergency package includes the following elements:

- Guarantee: All service components to include all functions and protocols specified in the NENA i3 reference architecture. All this in a timeline that meets the PSAP's needs and GIS data capabilities.
- A9-1-1 Routing: Emergency voice calls over the private, secure, and redundant IP infrastructure via SIP interfaces with transitional ESN routing supporting the migration to NENA i3.
- A9-1-1 Location Data Management: Complete solution for 9-1-1 data management for the provisioning and delivery of E9-1-1 services.
- A9-1-1 GIS Data Management: GIS based data management tools including MapSAG which enables 9-1-1 authorities to manage their GIS data and synchronize with the legacy MSAG. MapSAG's validation tools will improve GIS data accuracy in preparation for a full i3 implementation.
- A9-1-1 VIPER® Hosted Call Handling: Call handling equipment that is hosted in the network and evolves with network services. The CPE is provided with a call map view including text and supplemental services display.
- A9-1-1 Integrated Map Viewer: On each call handling desktop, an integrated map viewer application displays wireline, wireless, and VoIP calls and correlated A9-1-1 Enhanced Data to aid in caller and event location.
- A9-1-1 Text: Emergency text request for assistance services over i3 compliant interfaces.
- A9-1-1 Enhanced Data: Supplemental multi-media and address data that augments the voice and text calls. All emergency events are displayed via a map view with mouse over meta data display and site selection. The data is offered to call takers and dispatchers via integrated CAD solutions and to PSAP supervisors for a total jurisdictional view.
- A9-1-1 CAD Integration: Intrado will work with the PSAP's CAD vendor to integrate A9-1-1 Enhanced Data services into the CAD implementation.
- A9-1-1 Performance Metrics and Call Detail: Flexible reports, metrics, and call detail information configured to meet PSAP needs.

Also included in the package at no extra cost are Intrado professional services that include:

- Single Point of Contact (SPOC) for all aspects of the project who will act as your advocate for the life of the project to ensure evolution in your timeframe and ongoing support continues to meet your requirements

- Solution Delivery Management Services: Design, implementation, operations, monitoring, and support of all components including review of each PSAP's technical configurations and GIS data followed by recommendations on how best to proceed to meet PSAP goals and timeframes.

INTRADO I3 GUARANTEE

Introduction

The i3 Guarantee service suite provides an opportunity for Durham to exponentially improve public safety as a whole. The i3 Guarantee is a new i3 standards-based public safety class services delivery suite through which all future applications are made available to, and interoperable with, a broad emergency response community. The i3 Guarantee service suite provides comprehensive services that are guaranteed to include NENA i3 functions and that raise the bar on industry service standards.

Intrado delivers services through distributed components and an open and i3 compliant architecture. The standard i3 Guarantee ensures that:

- Fully integrated solution that ensures all NENA i3 functional elements interwork seamlessly
- All voice, text (SMS) and additional data services are delivered in accordance with the i3 Reference Architecture
- GIS data provisioning systems designed to address the distribution and performance requirements of managing real time GIS routing data

Transition to i3

The Intrado i3 Guarantee includes transitioning the jurisdiction or PSAP to the Intrado i3 solution. Durham will benefit immediately from next generation IP selective router technologies with the Intrado A9-1-1 Routing solution and be guaranteed the project managers, implementation plan, and support needed to transition the PSAP to full i3 functionality and protocol support.

Intrado will provide an upgrade Durham to its A9-1-1 Routing and A9-1-1 Location Data Management services. Intrado will also provide services that assist the 9-1-1 jurisdiction and PSAP entities in the gathering and/or management of GIS data for location, validation, routing, and first responder identification.

The Intrado i3 solution include all of the i3 functional element and protocols, including

- Legacy Network Gateway (LNG),
- Location Information Server (LIS) database,
- Caller Information Database (CIDB),
- Emergency Service Routing Proxy (ESRP),
- Emergency Call Routing Function (ECRF),
- Border Control Function (BCF),
- Spatial Information Function (SIF), and
- Location Validation Function (LVF).

These functions combine to form the ESInet solution. For more details see Appendix A.

A9-1-1 Routing

A9-1-1 Routing is a specialized managed network for processing 9-1-1 calls from both traditional and non-traditional voice networks. A9-1-1 Routing provides selective routing functionality via an IP-enabled network and SIP interface. A9-1-1 Routing delivers 9-1-1 calls from end offices, central offices, mobile switching centers, and VoIP systems to a designated PSAP over redundant, private, IP, highly available MPLS T1 circuits.

The A9-1-1 Routing service also supports PSAP queuing, PSAP overflow, call transfer, PSAP call origination, and virtual trunk group segregation for different call types.

A9-1-1 Routing is a robust and highly available routing service that will provide Durham with the ability to configure call routing to dynamically meet its needs. Routing can be managed in real time to meet normal, overflow, and disaster situations.

A9-1-1 Routing provides the familiar call routing configurations of selective routing, alternate routing, trunk-based routing, default routing, and PSAP abandonment routing.

A9-1-1 Location Data Management

A9-1-1 Location Data Management is a complete set of services that provide for comprehensive location validation and error correction, telephone service provider coordination, SOI management, and delivery of accurate data for 9-1-1 call support. The services include full standards-based support of all call types including wireline, wireless, and VoIP calls. Intrado will work with the PSAP to transition from the PSAP's legacy ALI system to full i3 implementation with GIS-based location validation and other i3 functions and protocols for routing and delivery. The services include:

- Database setup, data preparation, and loading of subscriber records and location validation data
- Service order processing and error resolution
- Management of the existing subscriber database and migration to LIS, CIDB management
- Management of the location validation data and functions
- Customer data management tools
- Subscriber database systems residing at geographically diverse Intrado locations
- E9-1-1 system monitoring
- Highly secure system access
- Wireline, wireless, and VoIP call support

A9-1-1 GIS Data Management

A9-1-1 GIS Data Management offers a comprehensive and methodical approach to GIS data management that includes flexible procedures individualized to each authority. The overall goal is to create and maintain the authoritative GIS database for 9-1-1 purposes.

GIS data, as provided by the 9-1-1 authority, is critical within the i3 Reference Architecture. This data will be used to provision the LVF, ECRF and PSAP map displays.

The GIS data management offer includes the customer's choice of one of the following options. For each solution, Intrado will provide the agency with an agreed upon mechanism for data sharing, reporting, and other GIS project management tasks:

- Agency maintains their own GIS data through their existing tools and submits to Intrado for validation and provisioning
- Intrado provides Agency with the Intrado A9-1-1 GIS Data Management package in order for them to maintain their own GIS data, which includes:
    - MapSAG 9-1-1 GIS Data Management System software
    - Training of Agency personnel
    - GIS data collection
- Agency maintains data layers which meet other internal GIS needs and Intrado manages additional i3 necessary GIS data layers
- Intrado manages all i3 required GIS data through partnership or (on behalf of the agency) with agency

A9-1-1 GIS Data Management Software: MapSAG

The Intrado MapSAG software allows a customer to create and maintain accurate 9-1-1 GIS data and to synchronize the GIS and 9-1-1 databases. This results in a "checks and balances" approach of consistency and accuracy across databases used for addressing and 9-1-1. The software is installed locally, at the customer location, and operates through a simple interface within ESRI's ArcGIS Desktop (ArcView, ArcEditor, or ArcInfo) product. Various toolbars are available for accessing the different tools and features available. The ArcGIS Desktop functionality that resides in the ArcGIS Desktop framework remains available while using MapSAG, including editing, drawing, layouts and/or spatial queries. An example of the integration of MapSAG and ArcGIS Desktop is that users can perform a spatial or attribute query and use the resulting records for analysis by the MapSAG tools.

Using MapSAG, ArcGIS Desktop, or a combination of both, new GIS data records (streets, structures, polygons etc) can be input into the GIS in a number of ways, including field GPS, on-screen digitizing, import, and auto-generation. The GIS data is stored in an ESRI format. MapSAG operates in the latest version of ArcGIS Desktop and utilizes a Personal Geodatabase or an Enterprise Geodatabase through ArcGIS Server (ArcSDE).

GIS Data Collection

The Intrado experienced 9-1-1 GIS Data Analyst team will provide remote GIS data management assistance to the Agency, including collection of existing GIS data and/or paper maps, GIS data accuracy validation and reporting, and data correction and editing where applicable. Priority will be placed on gathering GIS layers required to support i3, including Police, Fire, and EMS response boundaries, street centerlines, address points, and other data appropriate to support data maintenance procedures.

Intrado also offers Mapping and GIS Data Development Professional Services to assist the Agency with various map and 9-1-1 GIS database editing and correction in various areas.

A9-1-1 VIPER Hosted Call Handling

A9-1-1 VIPER Services provide hosted call handling functionality over a system that includes VIPER, Power 911, and Power MIS® servers, paired with Power 911 servers and workstations installed at each Customer PSAP. Intrado provides and maintains redundant, regionally diverse systems and facilities for A9-1-1 VIPER Call Handling, including hosted VIPER and Power 911 servers.

As Intrado assists the PSAP transitioning from legacy functionality to i3,A9-1-1 VIPER Hosted Call Handling solution will ensure the call handling equipment and software is at the version level needed to support i3 terminating ESRP functions. These terminating ESRP functions support the ability to query a CIDB for additional information about a call, and the ability to query a LIS for caller location information updates. VIPER services will also support the system to query an ECRF for police, fire and EMS information.

A9-1-1 VIPER is a hosted, highly available, geographically diverse network-based call handling service. The call handling, redundant Voice over IP for Emergency Response (VIPER) servers are deployed in geographically diverse data centers to ensure high availability. The VIPER backroom equipment with the latest generation Power 911, a computerized emergency call-answering system, will be deployed to meet Durham's NG9-1-1 call handling requirements now and in the future. Power 911 is the Intrado call-taking solution, engineered to deliver the most comprehensive set of E9-1-1 call-handling modules to public safety agencies. It provides an advanced feature set that includes sophisticated line handling capabilities and integrated telephony functionality.

VIPER leverages the power of Voice over IP (VoIP) technology for public safety applications. Provisioned for NG9-1-1 capabilities, it delivers state-of-the-art E9-1-1 call handling and allows for remote answering positions using the IP protocol as the sole carrier of voice and data. The solution is based on the use of the non-proprietary Session Initiation Protocol (SIP) for the delivery of voice services, reflecting the Intrado commitment to developing solutions that provide the most flexible offering from a technical and cost effective standpoint.

Intrado VIPER addresses PSAP demands for a scalable solution that allows them to move easily and efficiently onto a single physical network by integrating data, voice, and NG9-1-1 traffic while at the same time benefiting from Next Generation PBX or Call Server services.

VIPER allows PSAPs to:

- Scale to virtually any size
- Move to a networked model that integrates data, voice, and NG9-1-1 traffic
- Maximize Next Generation IP-based PBX services
- Implement call queues to meet call to call taker distribution needs
- Implement extended data services by selection of caller and responder information from the CIDB and ECRF.
- Benefit from emerging technologies as standards evolve such as supplemental data, Automatic Crash Notification (ACN), and external data sources

Power 911 Intelligent Work Stations (IWS) provide a powerful, proven front-end to Intrado VIPER for delivering advanced 9-1-1 call handling using open, industry-standard protocols. Implemented via a reliable fault-tolerant architecture, VIPER integrates fully with the Power 911 intelligent workstation and allows for fully functional remote answering positions. Intrado VIPER provides the most flexible call handling solution from a technical and cost-effective standpoint.

A9-1-1 Integrated Map View

Power 911 is offered with MapFlex, a public safety map viewer providing automatic display and management of calls, text messages, and other A9-1-1 Data services that correlate to an emergency call location.

A9-1-1 TXT29-1-1®

Intrado TXT29-1-1 service uses the three-digit short code “9-1-1” to enable citizens to text for assistance to a PSAP using regular SMS messaging. The text message is routed to the PSAP based on the location. A flashing button will indicate to the PSAP agent that a new text message has arrived. On selecting the button, the agent will be presented with the initial text message and can then commence a dialog with the text initiator via SMS.

The service is managed through the Intrado Emergency Text Gateway, a highly available and high throughput platform that:

- Undertakes PSAP routing of text messages
- Establishes connections to multiple concurrent PSAPs and the ECRC for overflow routing
- Establishes a SIP dialogue with the CPE equipment for the duration of the dialogue until the agent terminates the connection
- The SIP dialogue will evolve to include an i3 compliant interface
- Converts SMS messages incoming from the wireless carrier/SMS aggregator to the SIP dialogue
- Collects and makes available a transcript of all caller/PSAP interactions
- Provides a detailed set of usage reports

Intrado A9-1-1 TXT29-1-1 service benefits the Durham by securely receiving and sending text messages to the following citizens (who in many cases expect such service to work as part of the 9-1-1 system).

- The deaf and hard of hearing community
- The age demographic of under 24 who have embraced text over voice calling
- Any citizen who is in a circumstance where a voice call could endanger the caller.
- Delivery through a public safety grade infrastructure superior to other point-to-point text solutions

A9-1-1 Enhanced Data Services

Intrado is working with Alliance Member Program (AMP) partners to deliver a variety of supplemental data to the PSAP call taker and dispatcher. Included in the package are two supplemental data services.

Intrado A9-1-1 Data “Core Engine” is a managed, context-aware, IP platform integrating and correlating voice and data during emergency events. It is designed as a scalable platform that has the flexibility to grow and keep pace with evolving public safety needs and applications.

To support the wide range of applications and services that PSAPs demand, Intrado has created the A9-1-1 Alliance Program, that enables a variety of data sources from industry experts to be delivered as Additional Services to the PSAP. Additional data sources from third party vendors include building pre-plans, hazmat, location and personal data, gun shot detection,and car crash data. This program establishes a Next Generation 9-1-1 ecosystem of communications, rich media, and contextual awareness that redefines the capabilities available to Public Safety. The A9-1-1 Alliance Program enables the delivery of A9-1-1 Client Services which is the mechanism at the PSAP that integrates data events and delivers them seamlessly to the desktop and downstream applications. Additonal optional services with data sourced from industry leaders are available as optional services, see Additional Optional Services.

Included in the i3 Guarantee package are two Additional Data services:

- A9-1-1 Media provides the ability to deliver photographs, audio files, and video snippets from a caller’s mobile phone to a PSAP at the request of the PSAP. A9-1-1 Media also enables emergency response personnel to receive and distribute cell phone pictures, surveillance video, or retrieve “on-scene” eyewitness evidence via the Intelligent Emergency Network.
- A9-1-1 Address Intelligence provides the ability to find an address for subscribers who are unable to provide an address and where the latitude/longitude for the caller may be insufficient to locate the caller, for example in a multi-floor/tenant dwelling. Addresses are determined from commercial databases and are reflective of recent commercial activity (ordering a pizza for delivery, for example). Included in the display fields is the subscriber name.

Both services work on the principle that data is only provided at the request of the PSAP agent and is specifically correlated to the emergency incident via call telephone number and/or location.

Display of data services via CPE or CAD is through the client application. Where the PSAP already has a map view, Address Intelligence locations are plotted on the map, enabling the PSAP to choose the most likely location. Such choices may correlate with a caller location for an emergency call or may be totally independent of an emergency call.

A9-1-1 CAD Integration

Intrado will manage coordination with the PSAP's CAD vendor to enable delvery of A9-1-1 Enhanced Data services via the CAD system. The CAD Integration progam includes:

- Delivery of the ESMI Partner Guide
- A9-1-1 Data ESMI Network Simulator
- A9-1-1 Data Service Pack/Service that will include the Service Specification and Service Simulator
- Time in the Intrado ESMI Certiciation lab to validate services end to end

Intrado will provide engineering support services throughput the development and testing processes.

A9-1-1 Performance Metrics and Call Detail

Intrado offers customers an Internet accessible interface for retrieval of performance metrics and call detail information. The Intrado performance metrics tools and call detail reports are accessible through an Internet interface in a standardized HTML format using tools that include:

- A9-1-1 Intrado Call Handling Reporting provides reports on how calls are handled within your PSAP.
- The PSAP Management Portal enables authorized PSAP personnel to view provisioned aspects of the A9-1-1 voice system and access call detail records for completed calls.
- Clear View Metrics is a business intelligence reporting tool for metrics reporting, supplying authorized users with A9-1-1 Routing and A9-1-1 Location Data Management reports.

Solution Delivery Management

The Intrado Solution Delivery Life Cycle approach to plan, configure, network engineer, implement, test, document, train, and support Intrado Services follows the Intrado time-proven Solution Delivery methodology. The lifecycle begins with solution definition and architecture activities. During these initial phases, the joint Intrado and customer team members verify system application and implementation requirements, refine the solution architecture, and finalize the plan for solution deployment. Following definition and architecture phases, the team

orders, installs, configures, tests, and trains users on customer-facing solution components as part of solution integration and deployment effort. Following successful deployment, the maintenance phase begins.

The project supports the PSAP or Emergency Services Authority in transition to Intrado services and in the migration to i3. The Project Team will also work with Durham on the following designs and plans:

- ESInet design and implementation including call overflow and management
- A9-1-1 VIPER deployment strategies and deployment plans
- Text and Enhanced Data traffic analysis and demand

GIS routing data implementation and deployment plans

The primary goal of the lifecycle methodology is that the project aligns with overall customer expectations, and is tailored to fit the needs of Customer. The Project Plan phases are described below.

Solution Definition

The first phase in the solution lifecycle is the Solution Definition phase, which begins with the kickoff and alignment process and is critical to the overall success of the 9-1-1 initiative. During this process, key members of the joint project team unite to identify roles, responsibilities, critical success factors, project challenges, elaborate on specific strategies and project options, confirm project scope, and finalize plans to expedite solution delivery plans and resources. The proposed solution is reviewed in order to align each primary stakeholder with a common vision and strategy for unified team design and planning.

The Intrado team conducts current systems, processes, and site studies to more clearly understand the current system and user environment, allowing the Team to plan the most effective migration path to the new system.

Solution Architecture

During the Solution Architecture phase, the detailed solution design is finalized based on confirmed requirements. During this phase, the Team analyzes the current systems, operations, and operational procedures, identifies the human factors needs, considers implementation options, and with the Customer, commits the detailed solution design and implementation schedule.

Stakeholder participation to identify processes and standard operating impact is critical in this process to support a successful integration of the new system. It is vital that current procedures, connectivity, and routing policies are examined so that the appropriate practices are carried forward to the new system environment. Examples of important areas considered include load balancing philosophies and default routing rules.

Initial planning for connectivity from the telephone service providers to the Points of Interconnection (POI) also begins in the architecture phase. Key solution architecture planning activities include:

- Detailed solution design and schematics (onsite, site to site, site to Intrado, firewalls, routers, etc.)
- ESINet and IP specifications

- Telephone service provider connectivity specifications
- Physical requirements (e.g., equipment room design, floor loading)
- Call transfer requirements
- Training plan and schedule
- Refined project plan and timeline

Solution Integration

During the Solution Integration phase, the components of the solution, including processes, applications, servers, network components, and data flow, are engineered and readied for deployment. All network, regional, and customer premises components are delivered, and the equipment rooms and other facilities are readied.

Coordination with wireline, wireless, and VoIP telephone service providers is an essential part of this stage to plan for the 9-1-1 services management transition. Telephone service providers receive all necessary information and detail to obtain connectivity to the Intrado systems and the service provider's connectivity to the POIs is engineered and ordered.

Working closely with stakeholder groups, the project team designs customized provisioning plans (including incoming trunk route plans, bridge lists, and dialing plans). Additionally, the documentation and training developers customize the user and process documents and various training courseware, if needed, to meet the needs of the Customer.

Solution Deployment

During the Solution Deployment phase, all network components and equipment connectivity is validated and acceptance tests are performed, metrics tracking, reporting is initiated, and training is provided. After complete non-live call testing, the system begins supporting live 9-1-1 traffic.

In preparation for deployment and in partnership with the Durham, the Intrado Project Manager finalizes the cutover plan, including procedures for notification concerning schedule specifics.

Prior to the commencement of cutover, the project team members will hold a cutover meeting with the Customer and the telephone service providers. The purpose of this meeting is to discuss the progress of activities and the cutover readiness.

PSAP training is provided in accordance with the detailed training rollout plans. The system will then undergo a system acceptance test and quality walkthrough. Once complete, and in agreement with the Customer, a live-traffic cutover will then commence. Once live traffic has moved to the system, the maintenance period begins.

Solution Maintenance

The Solution Maintenance phase begins once live traffic is transferred onto any part of the system. During this phase, Intrado provides ongoing tiered support services to monitor service level performance, manage help desk requests, escalate support procedures, and support the Customer to reach the highest level of operational excellence. The solution support team is in place to receive, analyze, and rectify problems and information requests throughout the term of the contract.

Single Point of Contact

Intrado provides a designated customer Program Manager who is responsible for coordinating and delivering support through the term of the customer's purchased services. The Intrado Program Manager is the single point of contact for the customer and assists with all billing and reporting questions as well as provides monthly/quarterly customer reviews and functions as the customer's first point of escalation.

The Intrado Program Manager is responsible for overall customer service management that includes:

- Scheduling and facilitating kickoff meeting and status updates
- Coordinating Intrado resources
- Ongoing project management for the duration of the SOW
- Writing and maintaining all Intrado methods and procedures that affect Intrado operations and its interface with the customer, TSPs, and PSAP operations

During implementation of services, Intrado provides a dedicated Project Manager who works with the customer. The Intrado implementation Project Manager is responsible for all implementation related activities including creation and management of the implementation project plan with the customer and coordinating activities with TSPs such as establishing connectivity and test/migration schedules.

The implementation Project Manager meets on a periodic basis to review the status of implementation and completion of implementation tasks against target timeframes as described within the Integrated Project Plan.

Monitoring, Support, Maintenance, and Availability

Intrado provides continuous system support to each network element and application supplied by Intrado. Intrado has a Network Operations Center (NOC), that is staffed 24 hours a day, seven days a week, 365 days a year to actively monitor and manage the Intrado ESInet and associated services. When a potential or actual customer-affecting issue is defined and determined to be an incident, the Incident Administration team is engaged by the NOC. The team uses established Intrado processes that are ISO 9001:2000-compliant for immediate escalation, notification, resolution and reporting.

The Intrado services maintain the highest system availability. Intrado prides itself in that it creates all of its offerings upon a "no single point of failure" principle, using a fully redundant, multi-carrier, multi-protocol network linking all Intrado network elements and PSAPs within the ESInet. Intrado facilities and nodes are equipped with physically redundant data communications and power equipment such that any component can be maintained without overall service impact. Buildings and supporting facilities such as generators, fuel, and entrance demarcations require card access and are monitored 24 hours a day by security personnel.

The Intrado evolution to i3 will incorporate the Intrado philosophy that is guided by a set of public safety class service standards. Recognizing that opportunities continually arise to introduce new features and functionality into our 9-1-1 systems, the distributed architecture

used by Intrado Advanced 9-1-1^{SM} offers increased ability to accommodate growing and varied workloads in a modular fashion. New system features offer compelling advantages, such as access to new information, increased interoperability, higher efficiency, or expected cost savings. Proposed system changes and new features are stringently evaluated in the public safety context so as to not introduce weakness, inefficiency, or unpredictability into the systems. Each feature is designed, implemented, and operated in a manner befitting 9-1-1's critical role in the safety of the general public.

ADDITIONAL OPTIONAL SOLUTIONS

The following services are optional service elements that can be added to the i3 Guarantee for an additional monthly fee; this fee includes all ongoing support and maintenance costs:

- A9-1-1 PrePlans: Intrado a9-1-1 PrePlans provides PSAP personnel and first responders mission critical information such as floor plans, electrical and HVAC schematics to enhance situational awareness, resulting in more informed responses and better outcomes.
- A9-1-1 Family Location Service: A9-1-1 Family Location Service turns mobile communications devices into personal safety tools by utilizing cellular and smartphone technology. PSAPs can use A9-1-1 Fanily Location Service to track user locations during emergency situations.
- A9-1-1 HAZMAT: A9-1-1 HAZMAT correlates inbound 9-1-1 calls with the required hazardous-materials information provided by and registered with the centralized state database. Reference data includes information pertaining to detection and alarms, plume modeling, explosive standoff distances and response plans.
- A9-1-1 Gunshot Detection: A9-1-1 Gunshot Detection provides your PSAP and first responders with enhanced situational awareness by automatically delivering precise and accurate incident information such as the location, time and number of gunshots without a 9-1-1 call.
- A9-1-1 Image Map: Users quickly perform data mining, detailed searching and other tasks with this highly configurable and powerful web-based program built to complement your local data with live data feeds including weather, traffic cameras, news and other streaming information.
- Emergency Call Relay Center (ECRC): PSAPs can get the emergency call-taking resources they need by utilizing the Intrado ECRC – a fully staffed inbound call center available 24 hours a day, seven days a week, 365 days a year capable of taking 9-1-1 calls when it matters most.
- A9-1-1 Text to 5/6/10 Digit: the Intrado other text service that enable citizens to text for assistance to a PSAP using regular SMS messaging. With A9-1-1 Text, the user dials a 5/6/10 digit short code assigned to that PSAP and is routed based on the PSAP's preassigned digits.
- Enhanced Local Support: An Intrado support team is available to provide onsite support with strategic event planning 24X7X365.
- THOR Shield Emergency Communications Continuity Program: THOR Shield is a self-contained, full-service emergency operations continuity program that provides a mobile communications and command center complete with professional on-site support teams, strategic event planning and NG9-1-1 communications technologies to agencies of any size and budget whenever and wherever emergency operations are impacted

I3 GUARANTEE PRICING

The following pricing proposal for Durham County contains monthly recurring fees for a two PSAP deployment for a five (5) year term.

The i3 Guarantee includes the following services:

- ALI Services and Data Management
- A9-1-1 Routing
- A9-1-1 Routing i3 Evolution
- A9-1-1 CAD Integration
- A9-1-1 Text to 5/10 Digit or A9-1-1 Text to 9-1-1
- A9-1-1 Data Services – Address Intelligence and Media
- Single Point of Contact Service
- Performance Metrics
- Solution Management Services
- A9-1-1 VIPER hosted Call Handling
- A9-1-1 GIS Data Management

Intrado Fee Schedule for i3 Guarantee is as Follows:

i3 Guarantee Services	Fee:
Monthly Recurring Fees	
PSAP Base Price - 2 PSAPs	$25,838
Position Price - 30 Positions	$34,392
Total Monthly Recurring Fees	**$ 60,230**

APPENDIX A

The Intrado LNG function will interface the legacy 9-1-1 network to the Intrado ESInet. The LNG will convert CAMA and TDM/SS7 calls to IP within the Protocol Interwork Function (PIF) to support any 9-1-1 call received from the legacy network that is not IP based.

The Intrado LNG also provides a mechanism to obtain the caller's location at the time of the call by using the Location Interwork Function (LIF) to query the caller's appropriate LIS database. Once the LIS returns the location information, a function called the NG9-1-1 Specific Interwork Function (NIF) will route the call to the ESRP within the specific 9-1-1 ESInet based on the information received from a query to the ECRF. Each call will route based on the results received from the ECRF. This function is completed by the LNG, and the NIF will generate the SIP PIDF-LO (SIP message that has location information embedded in an XML format within the SIP invite (PIDF-LO - Presence Information Data Flow-Location Object) message to the appropriate i3 ESInet.

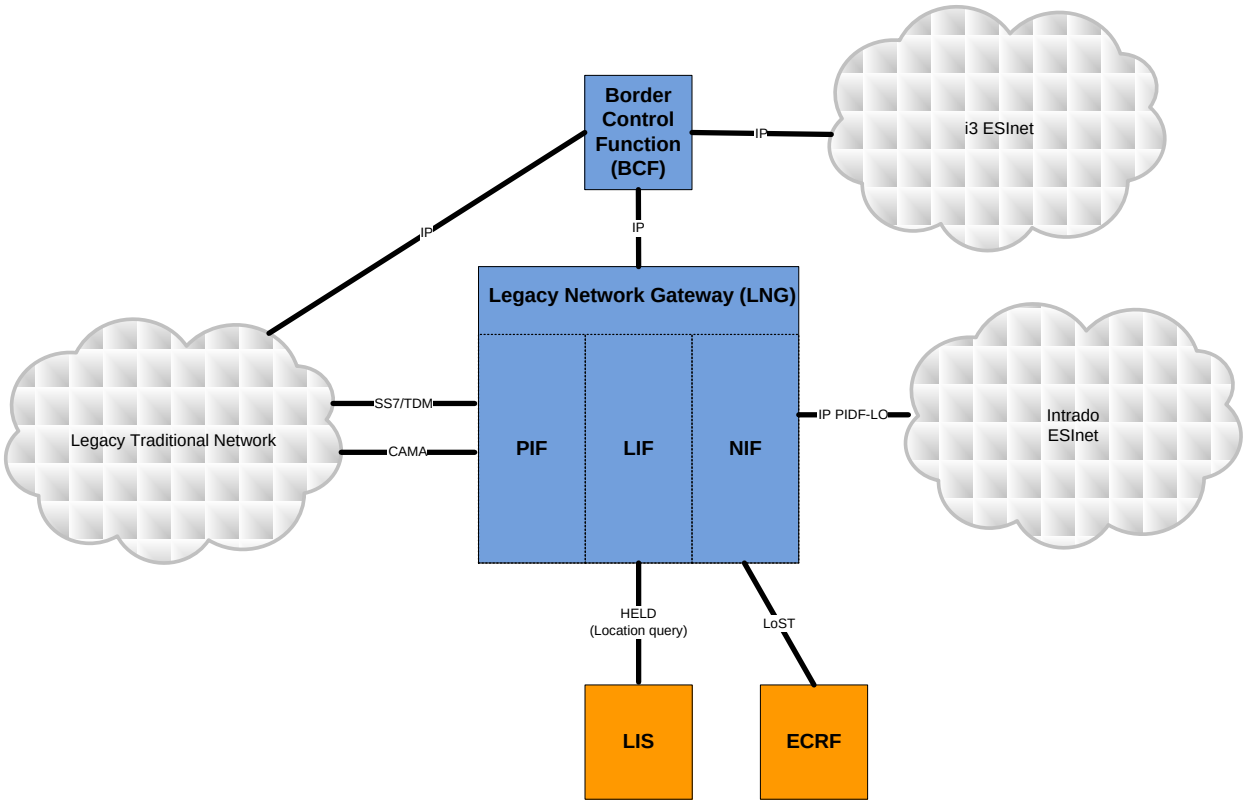

Figure 1: LNG Function

When the ESRP (Emergency Service Routing Proxy) receives the IP-PIDF-LO message, the ESRP may query the appropriate ECRF to determine the next hop for the 9-1-1 call. The Intrado ESRP contains the routing logic that routes the call to the appropriate terminating ESRP, also known as the PSAP's CPE. Once the call is handed off to the Intrado hosted VIPER solution, the VIPER will function as the terminating ESRP and will have the ability to query the

CIDB, LIS, and ECRF to accurately represent the call's information and associated jurisdictional information on the Power 911® workstation. This includes the ability for the VIPER service to query the ECRF to obtain specific information about which Police, Fire, and EMS supports the caller location, based on the GIS information received within the PIDF-LO message at the CPE. These functions will be part of the Intrado overall VIPER service.

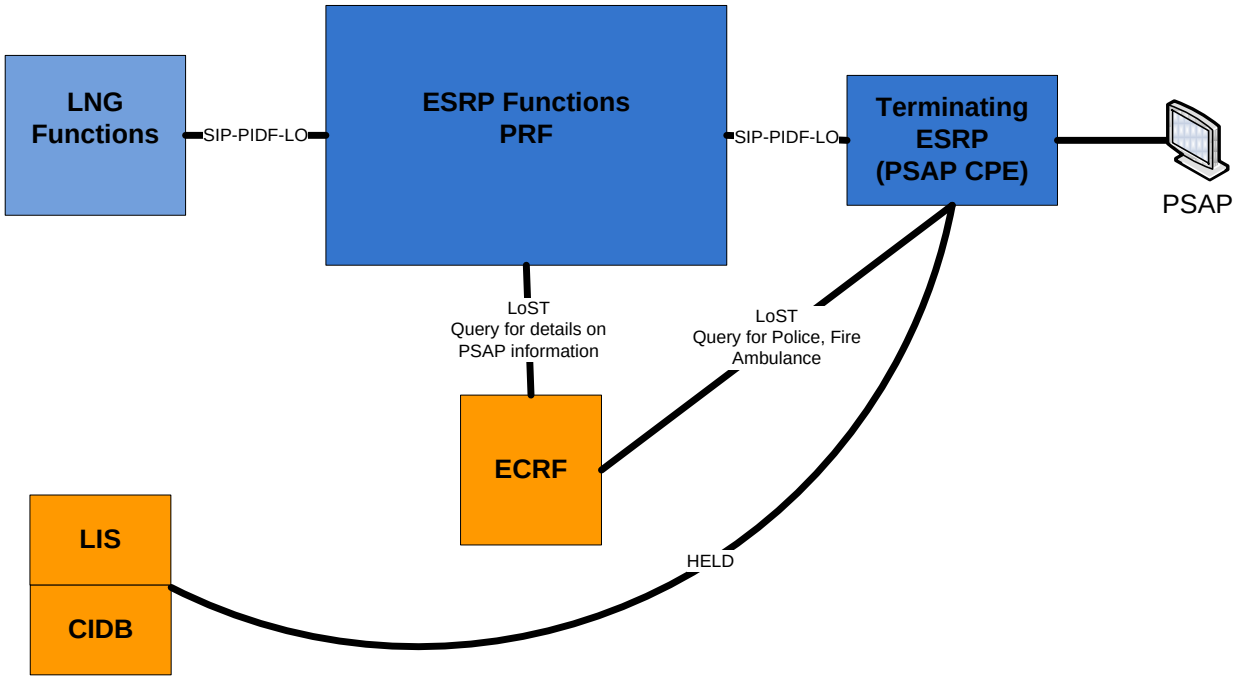

Figure 2: ESRP Function

i3 requires the use of GIS data provided by the PSAP or regional authority. When the authority is in a position to provide GIS data, including location data, PSAP boundaries, and emergency responder layers, Intrado will use this data as the source for validating locations, routing calls, and identifying the emergency responder agencies associated with the caller's location.

Intrado will act as the i3 Spatial Information Function (SIF) Operator, using i3 specified replication protocols to collect GIS data from the customer, validate it, and provision the i3 functional elements. Figure 3 illustrates a high level view of the provisioning flow of customer GIS data to the i3 functions that will utilize this data for various purposes. The SIF ensures validated locations, call routing data, and emergency responder data are all provisioned from a common, consistent, and authoritative source.

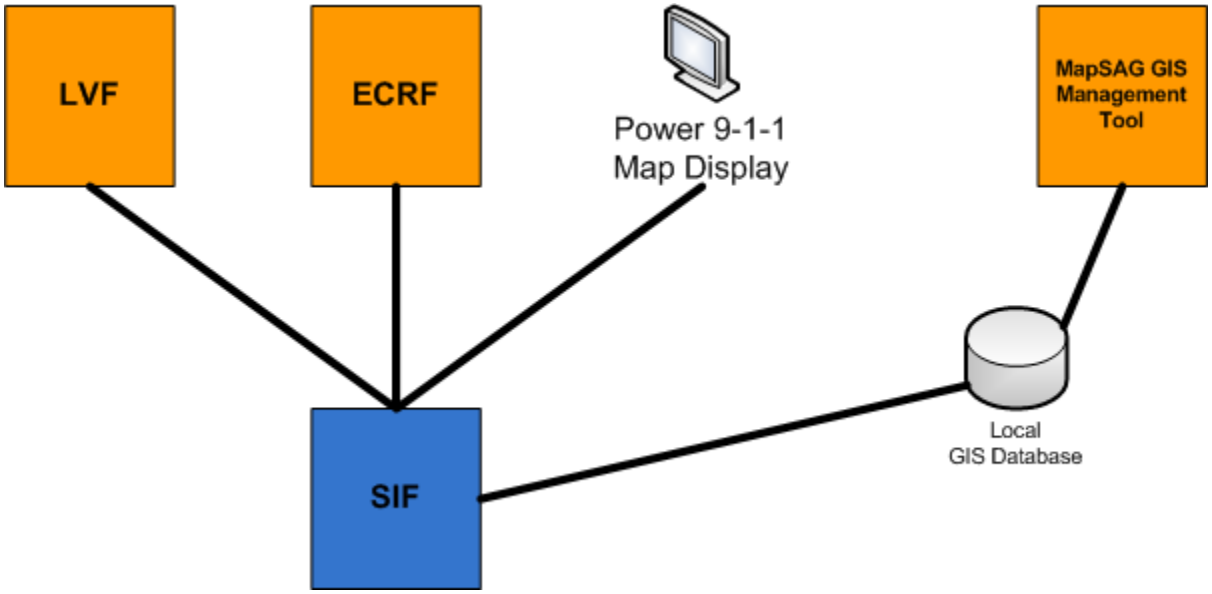

Figure 3: Spatial Information Function (SIF)

Additionally, the A9-1-1 GIS Data Management Services included in the i3 Guarantee offers you support you may want or need in preparing your GIS data for i3. This includes collection of existing GIS data and/or paper maps where necessary, GIS data accuracy validation and reporting, and through cooperation with the customer, data correction and editing.

In i3, ALI management services provided to carriers transition to Location Information Systems (LIS), Call Information Database (CIDB), and Location Validation Function (LVF) services. The LVF will utilize the PSAP's or regional authority's approved GIS location data to validate TN record location information. The LIS is pre-provisioned with validated location information for TNs to be retrieved during a 9-1-1 call for routing purposes and displayed at the PSAP. The CIDB provides customer information in response to a PSAP bid. Intrado will continue to provide data management services to carriers by hosting the LIS, CIDB, and LVF and working with the PSAP's many telephone service providers to resolve location validation errors.